

# ATOMIC ENERGY *newsletter*®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH  
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Dear Sir:

Major financing of the gas cooled nuclear power plant, as proposed by High Temperature Reactor Development Associates, Inc., will be by Philadelphia Electric Co., whose system will receive plant's generated electricity, it has now been learned. That utility will contribute the site and \$8 million toward construction of the plant. The other firms making up High Temperature Reactor Development (51 operating and 2 holding utility companies) will provide \$16.5 million in the form of contributions of 0.1% to 0.5% of their annual gross billings for five years. Both USAEC and Congressional approval are necessary for the proposition to materialize; some \$14.5 million of USAEC research and development support has been asked toward the project's \$39 million total cost. (Other BUSINESS NEWS, p.2 this LETTER.)

Dedicated last week at Brookhaven National Laboratory, Upton, N.Y., was the new medical research center there whose facilities include the first U.S. nuclear reactor designed specifically for medical use. In addition to the reactor, the center includes a 48-bed hospital for research patients and laboratories for studies of medical applications of atomic energy. The reactor, scheduled for operation early in 1959, has, as design features, two ports on opposite sides which allow radiation from the core to be used directly in the treatment rooms. Control of the beams is by insertion of various combinations of absorber and converter plates, making for flexibility. Third face of the reactor is for general irradiation of large objects, and the fourth has tubes leading into the core permitting production and immediate utilization at the hospital site of short-lived radioisotopes. (Other REACTOR NEWS, p.2 this LETTER.)

Exports of uranium ores and concentrates by Canadian companies is now at a level which is more than double the 1957 figures. For October, 1958, the value of such exports reached \$30,707,000 according to official Canadian government statistics. This compares with \$13,852,000 for the like month of 1957. For the first ten months of 1958 total exports of such ores and concentrates was \$215,098,000 as against \$94,959,000 for the same period last year. Major portion of the export sales was to the U.S. to fulfill contractual commitments made with the USAEC.

Contract to develop a tactical personnel dosimeter for measurement of nuclear radiation has been awarded Controls for Radiation, Inc., Cambridge, Mass., by the U.S. Army's Chemical Corps. The device will indicate exposure to neutron and gamma radiation through color changes. Its response will be to levels of radiation that are biologically significant. (Other CONTRACT NEWS, p.3 this LETTER.)

Recent shipment has been made by Radiation Counter Laboratories, Skokie, Ill., of that firm's 256-channel analyzer to the National Institute of Radiological Sciences, Tokyo, Japan. It is the nineteenth such instrument exported by the firm, from a total production since July, 1956, of 108. (Other PRODUCT, PROCESS, INSTRUMENT NEWS, p.4 this LETTER.)

ATOMIC ENERGY BUSINESS NEWS...

FOREIGN DISTRIBUTION OF REACTORS:- The complete line of research, educational and training nuclear reactors manufactured by Aerojet-General Nucleonics, San Ramon, Calif., will be exclusively distributed outside the U.S. (except for United Kingdom) by Westinghouse Electric International Corp., under terms of an agreement the two firms have now made. Westinghouse will continue to concentrate on development and production of power reactors and now has a complete line of six types of non-power reactors to market abroad. Aerojet-General's line includes AGN 101, rated at one milliwatt, and which is for educational use only; model AGN 201, which can operate up to 20 watts; model AGN 211, a pool-type reactor rated at 15 watts and a modification AGN 211-P, which can operate continuously at 100 Watts; model AGN 401, a tank-type reactor to operate at powers up to 10 kw; model AGN 451, a standard swimming pool-type reactor with a 100 kw rating; and ANTR which is a test reactor with a maximum 10,000 kw thermal output.

Research reactor, of the company's TRIGA type, has been sold by General Dynamics Corp., to the Republic of Austria, through its Federal Ministry of Education. It will be supplied by GD's General Atomic division, San Diego, Calif., and will be used by Austrian universities and technical high schools. The model to be supplied will be a TRIGA Mark II, complete with neutron beam ports and thermal column in addition to the TRIGA's standard irradiation, isotope-production, and training facilities. When installed in Austria, it will be capable of being operated on a permanent basis at a power level of 30 kw and intermittently at power levels up to 100 kw.

PROPOSAL TO BUILD NUCLEAR POWER PLANT WITHDRAWN:- Plans of Westinghouse Electric Corp. and Pennsylvania Power & Light Co. to build a large-scale nuclear power plant using a homogeneous type reactor, as embodied in proposal of Dec. 11, 1957 to the USAEC, have been withdrawn. The two companies said present facts indicate the need of further research and development work, including prototype developments and experience, before a large scale plant would be warranted. Initial plans had called for a 150,000 kw plant. The three and one-half years of research work on the project have produced "multiple uncertainties", the companies stated, and said they no longer could justify their high rate of current spending "in view of the technical infeasibility of building a large-scale plant without first developing and operating a prototype". (Total cost of the plant was estimated at \$107.7 million, with the two firms to put up \$78.4 million, and the USAEC to contribute \$25.3 million, and waive \$4 million in fuel use charges. By the end of 1959 the firms were to decide whether to build the plant, or abandon it. Under terms of the original agreement, the firms will reimburse the USAEC for Federal funds spent to date on the project.)

SITE SELECTED FOR REMOTE NUCLEAR POWER PLANT:- Sundance, Wyoming has been picked by U.S. Air Force as site for installation and test operation of a factory-assembled, modular nuclear power plant which the Air Force is developing for remote bases. (Sundance Air Force Station, a new Air Defense Command aircraft control and warning site, will be constructed in 1959 at the location.) The plant, which will have a pressurized water reactor, cooled and moderated by light water and fueled with enriched uranium, will produce 1000 kw of electricity and 20000 kw of heat for use in the Sundance installation. Proposals were made to the USAEC by nine companies to supply this plant whose factory-assembled modules can be air-transported, and flown to a site, and also disassembled and relocated. Making proposals were Alco Products; Associated Nucleonics; Combustion Engineering; Curtiss-Wright; H.K. Ferguson; Lockheed Aircraft; The Martin Co.; Westinghouse Electric; and Shiflet Bros.

ATOMIC ENERGY FINANCIAL NEWS...

FAST WRITEOFF CERTIFICATE ISSUED:- Fast amortization for tax purposes has been allowed Electric Boat div. of General Dynamics Corp. on 60% of the \$2,407,663 cost of a facility for construction of nuclear powered submarines. Facility is at Groton, Conn.

ANALYSES ISSUED BY BROKERAGE FIRMS:- Review of Technical Operations, Inc., which recently reported net profits for 1958 up 47% over 1957 is offered by May & Gannon, Inc., Boston.... Discussion by A.M. Kidder & Co., New York of Canadian uranium issues is offered by that firm under title Less Romance, More Cash.... Newport News Shipbuilding is analyzed in report from Walston & Co., New York.

ATOMIC ENERGY CONTRACT NEWS...

CONTRACTS AWARDED:- Western Electric Co. has received new USAEC contract under which that company's wholly owned subsidiary, Sandia Corp., will continue to operate for an additional five year period Sandia Laboratory, at Albuquerque, N.M., and Livermore, Calif. (Sandia Corp. was set up in 1949 by Western Electric, the manufacturing subsidiary of American Telephone & Telegraph Co., to operate Sandia Laboratory. It has grown to a \$73 million facility employing more than 7700 persons, approximately 500 of whom are at Livermore. Sandia designs nuclear weapons around the explosive systems developed at Los Alamos Scientific Laboratory, and the University of California's E.O. Lawrence Radiation Laboratory at Livermore.)

Proposals (unsolicited) for studies of three new reactor concepts have been accepted by the USAEC as bases for contract negotiations. American Standard proposal covered study of a mercury-cooled, fast breeder reactor; General Electric's covered study of a modified sodium graphite reactor with modules containing fuel and coolant; and proposal of Babcock & Wilcox was for a study of a gas suspension coolant reactor. Each study was estimated to cost about \$150,000. (Proposals may be submitted at any time for evaluating power, heat generation, or any other industrial civilian application; those submitted by Aug. 31 and Feb. 28, respectively, are reviewed during the first weeks of September and March respectively. Further details are available from Division of Reactor Development, USAEC, Wash. 25, D.C.)

Three architect-engineering firms are to receive contracts for studies to determine most economical power station design and engineering approach in conjunction with different nuclear reactor concepts. Firms are Stone & Webster Engineering associated with Combustion Engineering, who will make pressurized water reactor study; Ebasco Services associated with General Electric Co. who will make boiling water reactor study; and Bechtel Corp. associated with Atomics International who will make organic cooled reactor study. Some 86 proposals had been made by 32 architect-engineering firms in answer to the Commission's September, 1958, invitation.

Cost-plus fixed-fee contract covering an estimated \$1 million in construction services has been awarded H. K. Ferguson Co., San Francisco, for work at national reactor testing station, Arco, Idaho. The job consists of modifications and additions to existing utilities, buildings, services and for a cooling loop in the materials testing reactor-engineering test reactor areas.

PROPOSALS MADE:- Government of Canada has offered to provide free of charge to the International Atomic Energy Agency three tons of natural uranium to meet the Agency's first request for nuclear fuel. Bids had been received from three countries. The U.S. submitted the bid of Davison Chemical Co., Baltimore, Md., at \$54.34 per kg f.o.b. Baltimore; Belgium submitted bid of Societe Generale des Minerals, Brussels, at 1,700 Belgian francs (equivalent of \$34) f.o.b. Antwerp; and Canada offered the uranium at no charge, f.o.b. a Canadian seaport. The Canadian offer specified that the uranium (which Japan had requested of the IAEA) was to be sold at a price by the IAEA "bearing a reasonable relationship to the current world price" and that the offer was made to "expedite the Agency's activities". It was also specified that this was not to be regarded as a precedent. The monetary value of the Canadian gift is in the order of \$100,000.

Eight proposals have been received by the USAEC from industrial firms for research and development work and for the design of a fast breeder reactor using a plutonium oxide-uranium oxide fuel cycle. Objectives are to reduce cost of electric power from fast breeder reactor power stations, primarily by reducing fuel cycle costs. Proposals were made by Atomic Power Development Associates; Atomics International; Aerojet-General; Curtiss-Wright; General Electric; Nuclear Development Corp. of America; Nuclear Materials & Equipment Corp.; and ACF Industries.

MEETINGS, COURSES, CONFERENCES...

COURSES:- Basic nuclear power school has been established by U.S. Navy at its Mare Island Naval Shipyard, Vallejo, Calif. The six months academic course for the enlisted men students will be followed by training at land based naval reactor prototypes.

MEETINGS:- Session on radiation is scheduled for the Apr. 26-May 1, 1959 meeting in Chicago of the American Industrial Hygiene Assoc. Details from E. Wheeler, Monsanto Chemical Co., St. Louis 4, Mo.

First series of meetings were concluded in Vienna last fortnight by panel on disposal of radioactive wastes in the sea of the International Atomic Energy Agency.



NEW PRODUCTS, PROCESSES, SERVICES...for nuclear lab & plant...

NEW PRODUCTS FROM MANUFACTURERS:- New line of sample changers now being produced by this firm includes such features as allowing any type of detectors to be used (scintillation, alpha, beta, gamma, or neutron) and accommodating up to 1000 samples, as large as 4" in diameter. They can also be supplied to operate with preset count or with preset time. --Nucleonic Corp. of America, 196 DeGraw St., Brooklyn 31, N.Y.

Signs for identifying radiation and x-ray hazards, with self-sticking material on the back, are now being supplied by this company in five sizes from 1x2.25-in. to 5x14-in. With magenta symbols and wording on a bright yellow background, the signs comply with USAEC regulation 20.203. --W. H. Brady Co., Milwaukee, Wisc.

Spiral flow detector, model NE501, is fabricated with spirally wound thin capillary of this manufacturer's plastic phosphor. Suggested uses are for detection of micro quantities of active gases or solutions, for in vivo, medical and biological studies, etc. --Nuclear Enterprises, Ltd., Winnipeg, Canada.

PRODUCT NEWS:- The isotope samarium-153, now being used experimentally by General Motors for industrial radiography, is to be offered by GM to other firms, the American Nuclear Society was told by GM people at its recent Detroit meeting. Use of the isotope permits exposure time one-fifth that of other low-energy photon sources; additional advantage is light weight of the samarium-153 setup, the source, container, and shield weighing only about 30 pounds.

New series of steels now being used in fabrication of components for nuclear environments is being produced and marketed by Jones & Laughlin Steel Corp., Pittsburgh. These special "nuclear" steels have manganese and cobalt content at an extremely low point to make them an effective and economical shield material. (Other elements, such as titanium, are added when needed to provide the best combination of nuclear and mechanical properties.) Since manganese has always been considered one of the essential elements in the manufacture of steel, the chemistry of these steels is significantly different from that of normal standard grades of steel. For commercial applications other than in nuclear environments, biggest advantage of these new steels is their plasticity while cold, and good cold forming characteristics.

Now in full operation is the W. Germany heavy water plant of Farbwerke Hoechst, which can produce heavy water at the rate of six tons per year. The company reports that preliminary results of the hydrogen distillation operation, which utilizes some 353,000 cu. ft. per hour of ammonia synthesis gas, show the low-temperature portion of the plant operating satisfactorily. It says that refrigeration losses are low, with the power consumed lower than original estimates.

The ARCO model AEL-101 current integrating electrometer, initially designed for particle accelerator beam current integration, can in conjunction with proper external circuitry be applied to industrial measurement control and instrumentation systems, the manufacturer, Applied Radiation Corp., Walnut Creek, Calif., points out. This allows the electrometer to be used for many situations that were until recently difficult and sometimes impossible to monitor, i.e., measurement of total dosage delivered to a sample by an electron linear accelerator or other source of high energy particles.

Steam turbine-generator sets rated 2500 kilowatts have been ordered from General Electric Co. for the U.S. Navy's first nuclear powered guided missile frigate (DLGN), and will be supplied by GE's small steam turbine department, Fitchburg, Mass. Four of the sets will be installed on board the DLGN now being designed by the Bethlehem Steel Co.'s Quincy, Mass., shipyard. Two identical sets will also be provided for the land prototype reactor plant now under construction at West Milton, N.Y. Rated at 450 volts, the turbine-generator sets will supply variable 15 to 60 cycle three phase electrical power. They are identical to the ones GE is manufacturing for use on board the U.S. Navy's first nuclear powered aircraft carrier (CVAN 65), and which are presently installed in the prototype reactor plant for large surface ships at the naval reactor facility, National Reactor Testing Station, Arco, Idaho.

MANUFACTURERS' LITERATURE:- Handbook of Engineering Data available from National Carbon Co., div. of Union Carbide Corp., 30 E. 42nd St., New York N.Y. gives graphs, tables and curves relating to the use of manufactured graphite in the nuclear field, and in chemical processing, metallurgical, electrical, and other fields.

ATOMIC ENERGY PATENT & TRADE-MARK DIGEST...

ISSUED December 9, 1958 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1)

Purification of liquid metal reactor compositions. Morris A. Steinberg, inventor. No. 2,863,759 assigned to Horizons, Inc. (2) Means for generating electrical energy from a radioactive source. Alexander Thomas, Roger Sweetser, inventors. No. 2,864,012 assigned to Tracerlab, Inc., Boston, Mass. (3) Irradiation process. Boynton Graham, inventor. No. 2,863,812 assigned to E.I. du Pont de Nemours and Co., Wilmington, Del.

ISSUED December 9, 1958 to GOVERNMENTAL ORGANIZATIONS:- (1) Method of separating hydrogen isotopes. Oliver N. Salmon, inventor. No. 2,863,526 assigned to USAEC. (2) Sulfur dioxide leaching of uranium containing material. A. Thunæs, F.T. Rabbitts, K.D. Hester, H.W. Smith, inventors. No. 2,863,716 assigned to USAEC. (3) Recovery of uranium values from copper-bearing solutions. Robert Kunin, inventor. No. 2,863,717 assigned to USAEC. (4) Plutonium concentration and decontamination method. D.C. Overholt, F.W. Tober, inventors. No. 2,863,718 assigned to USAEC. (5) Method of improving the carrier precipitation of plutonium. H.J. Kamack, J.H. Balthis, inventors. No. 2,863,719 assigned to USAEC. (6) Combination of hydrogen and oxygen. H.F. McDuffie, C.H. Secoy, inventors. No. 2,863,729 assigned to USAEC. (7) System for producing uranium tetrafluoride. Donald C. Brater, John W. Pike, inventors. No. 2,863,735 assigned to USAEC. (8) Nuclear reactor fuel element. K.A. Kesselring, A.U. Seybolt, inventors. No. 2,863,814 assigned to USAEC. (9) Nuclear reactor. R.V. Moore, J.H. Bowen, inventors. No. 2,863,815 assigned to USAEC. (10) Nuclear reactor fuel element. John T. Stacy, inventor. No. 2,863,816 assigned to USAEC.

ISSUED December 16, 1958 to GOVERNMENTAL ORGANIZATIONS:- (1) Separation of uranium, plutonium, and fission products. R. Spence, M.W. Lister, inventors. No. 2,864,664 assigned to USAEC. (2) Reducing plutonium values from a higher valence state to the trivalent grade. D.R. Miller, H.R. Hoekstra, inventors. No. 2,864,665 assigned to USAEC. (3) Production of uranium tetrachloride. V.P. Calkins, inventor. No. 2,864,666 assigned to USAEC. (4) Process for recovering uranium and vanadium from a carbonate leach solution. R.H. Bailes, D.A. Ellis, R.S. Long, inventors. No. 2,864,667 assigned to USAEC. (5) Uranium extraction process. W.H. Baldwin, C.E. Higgins, inventors. No. 2,864,668 assigned to USAEC. (6) Method of inhibiting corrosion of ferrous metal surfaces by heavy liquid metals at temperatures above 500 deg.C. D.H. Gurinsky, O.F. Kammerer, J. Sadofsky, J.R. Weeks, inventors. No. 2,864,731 assigned to USAEC. (7) Nuclear reactor fuel element. M.H. Shackelford, inventor. No. 2,864,758 assigned to USAEC. (8) Nuclear reactors. E. Long, J.W. Ashley, inventors. No. 2,864,759 assigned to USAEC. (9) Process for the recovery of plutonium. H.A. Potratz, inventor. No. 2,864,841 assigned to USAEC.

TRADE-MARK NEWS:- Letters FW with design is to be issued as trade-mark to Foster-Wheeler Corp., New York, (SN 47,947) for equipment and apparatus utilizing nuclear energy.....Baird-Atomic, with design, is to be issued under SN-47,175 as trade-mark to Baird-Atomic, Inc., Cambridge, Mass., for nuclear, electronic, and spectrochemical instruments.....Expression Nucor, with design, is to be issued as trade-mark (SN-51,651) to Nuclear Corp. of America, New York, N.Y., for fluid flow meters and liquid level gauges.....AccuFull will be granted as trade-mark (SN 53,875) to Industrial Nucleonics Corp., Columbus, Ohio, for equipment to determine amount of fill in containers.

BOOKS & OTHER PUBLICATIONS...

The Transuranium Elements. Glenn T. Seaborg. Based on the Silliman Lectures delivered at Yale by Dr. Seaborg in 1958. Approximately one-third of book covers discovery of plutonium and its development in World War II as an explosive agent.-- Yale University Press, New Haven, Conn.

Nuclear Engineering Handbook. Harold Etherington, editor. For engineers interested in industrial and other useful applications of nuclear energy. 1857 pages.--McGraw-Hill Book Co., New York 36, N.Y. (\$25.00)

Sincerely,

The Staff,  
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